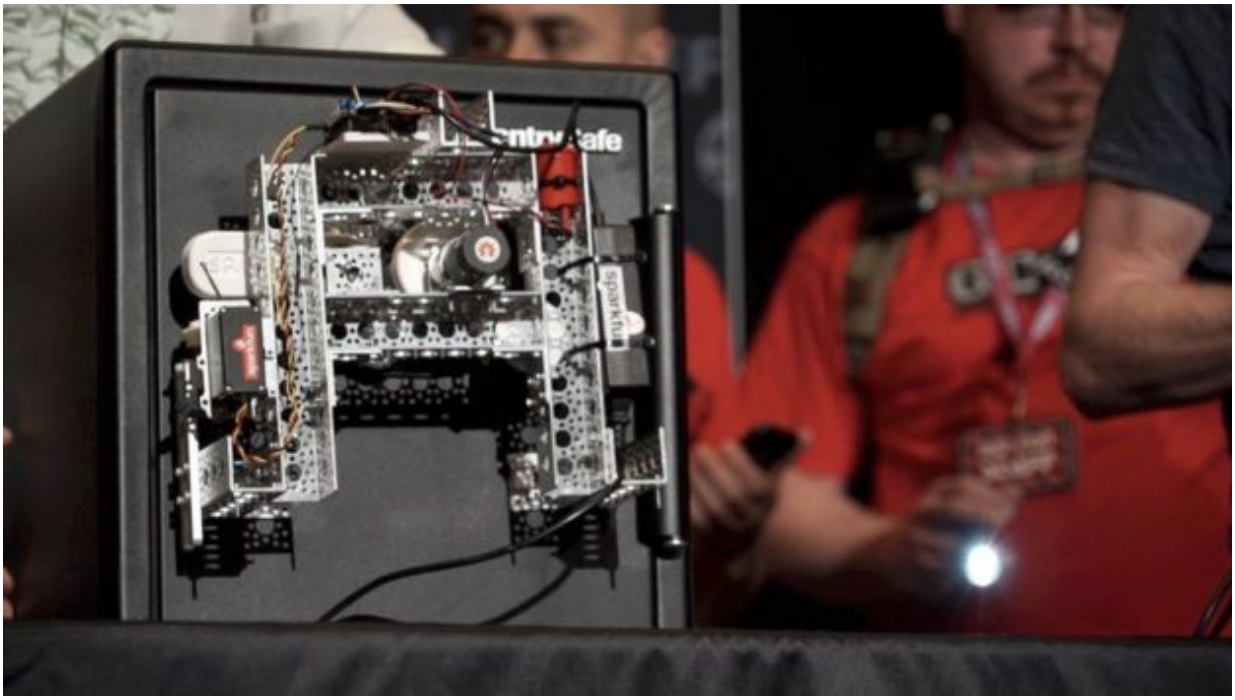
# How a budget-friendly robot pleased the audience at DefCon (and cracked a safe)

August 1 2017, by Nancy Owano



Credit: BBC

(Tech Xplore)—For an audience like the one at DefCon in Las Vegas this was quite an act. They sat through some tense minutes as a robot tried, and finally succeed, to crack a combination safe live on stage.

This was a cheap robot, said Adnan Farooqui in *Ubergizmo*, brought to the show by the team who arrived in Las Vegas from Colorado-based

SparkFun Electronics. The robot cost them $200, according to reports.

Paul Wagenseil, a senior editor at *Tom's Guide*, said it methodically tried one three-number combination after another onstage as the researchers discussed their methods. "After about half an hour, it opened the safe."

SparkFun's Nathan Seidle told the BBC: "That was one of the scariest things we've done. Lots of things can go wrong, and this was a very big audience." We walk up, attach it to the safe, and it starts doing its thing, he said, in explaining what transpired. Reports said they chose not to carry out a test run the night before the event.

Why this is interesting: Farooqui wrote, "There are more than a million possible combinations for a safe of this kind so it's impossible to try them all out manually." He said "The robot brings down the number of possible combinations from one million to just 1,000. It then automatically tries the combinations quickly and filters them all out until it finds the one that opens the safe."

> And they got it open. It only took 30 min.
> pic.twitter.com/LNxmlvOArO
>
> — Jack (atDEFCON) (@jmorse_) July 28, 2017

*Silicon UK*'s News Editor Roland Moore-Colyer had more to say about the feat.

"Rather than try every combination the lock could have, in a more traditional case of brute force hacking, the robot was able to work out the size of the indents on the dial and figure out the differences between the 'right' indents and the 'wrong' indents for the safe's code. From there it could reduce the amount of combinations it needed to test from a million to one thousand and thus rapidly test combinations faster than a

human could."

Audience applause was described by the BBC as "rapturous."

The team used 3-D printed parts, and *3Ders.org* described the components of this show-stopping robot: printed parts, Arduino board, motor, and a number of sensors. "No matter how much money you spend on a safe… nothing is impervious," SparkFun's Nathan Seidle said.

The BBC carried the story of the team who flew in from Colorado. They could not take a safe on the trip so they bought a new one in Las Vegas. A team member spoke to the BBC about the demo.

Feelings during the demo? Kind of stressful, but they were pretty excited. Nonetheless, the take-home from their demo did not appear to be instilling fear over owning such a safe.

SparkFun's comment in the BBC report: "This robot is never going to come in someone's home and open up their safe. There's lots and lots of other things they should be worried about, not our robot...This is just a fun demonstration."



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